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Preliminary Survey of Cutoff Creek - Clearwater River Drainage, 1967. 1
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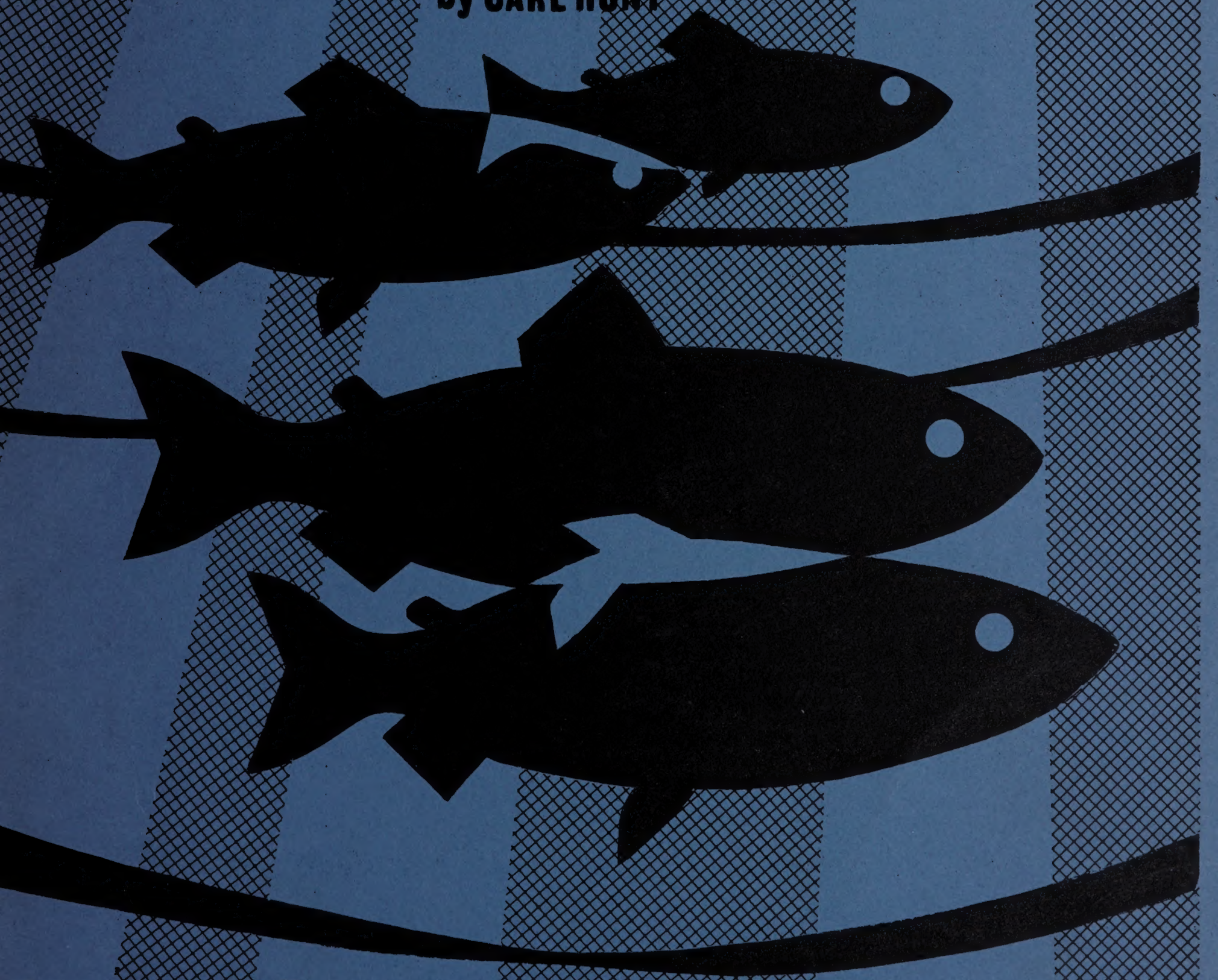
Preliminary Survey of Cutoff Creek -Clearwater River Drainage

by CARL HUNT



Survey Report No.1

Alberta Fish and Wildlife Division
FISHERIES SECTION

A PRELIMINARY SURVEY OF CUTOFF CREEK

- CLEARWATER RIVER DRAINAGE

1967

by

Carl Hunt
Fishery Biologist

A PRELIMINARY SURVEY OF CUTOFF CREEK - CLEARWATER RIVER DRAINAGE

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The survey of Cutoff Creek is part of a program to assess the more accessible streams in the Clearwater Forest Reserve, to determine the productivity of the streams and the present status of the fish population and to establish a sound management program.

Stream flow, bottom fauna and the fish population were sampled from two sections, numbered consecutively proceeding upstream, in the lower reaches of Cutoff Creek, June 14 and 15, 1966 (Figures 1 & 2). Limited access prevented the sampling of the upper reaches, which reportedly contain good populations of Dolly Varden. Further observations of the stream were made on September 15, 1966 and May 9, 1967.

Physical Features

The physical features of Cutoff Creek as described by Miller and Paetz, 1953 and compiled from maps and observations in 1966 are listed below.

Source: Beaver Lake (19-34-12-W5)

Mouth: Clearwater River (15-35-11-W5)

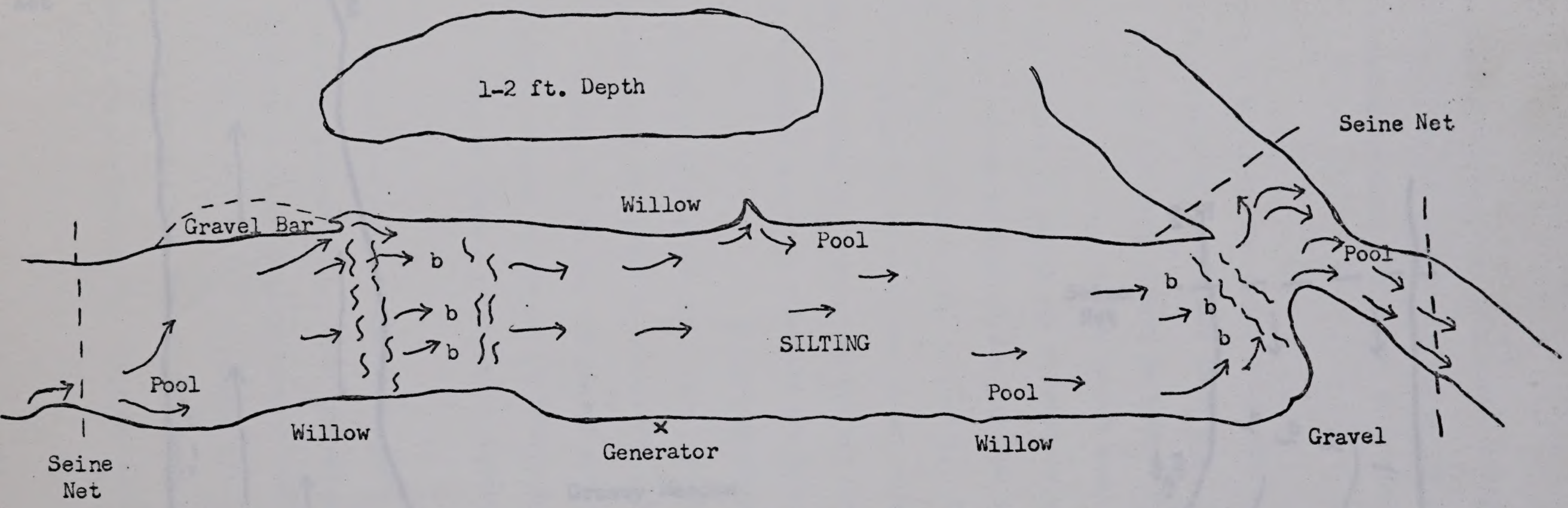
Tributaries: Intermittent

Stream size: Cutoff Creek has a length of 11 miles. The average width is about 20 feet in the lower reaches.

Flow: Stream flow, measured by the "Chip Method", was 22 cubic feet per second (c.f.s.) in section II and 14 c.f.s. in section I. The measurements were repeated at both sections,

CUTOFF CREEK SECTION #I

Length = 325 Feet

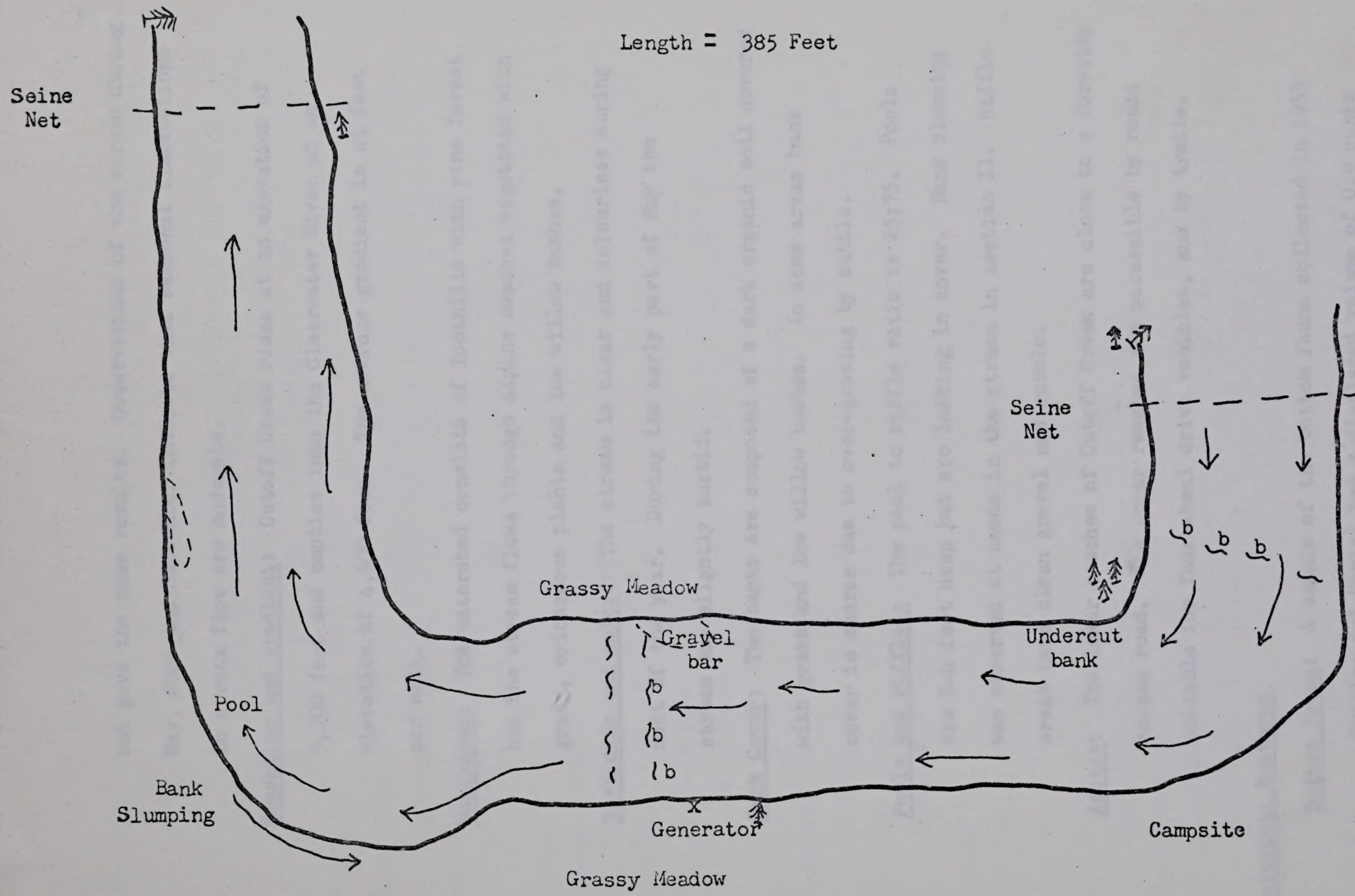


b = Bottom Sample

Figure 1. Sketch map of the lower section sampled in Cuttoff Creek, June 14, 1966.

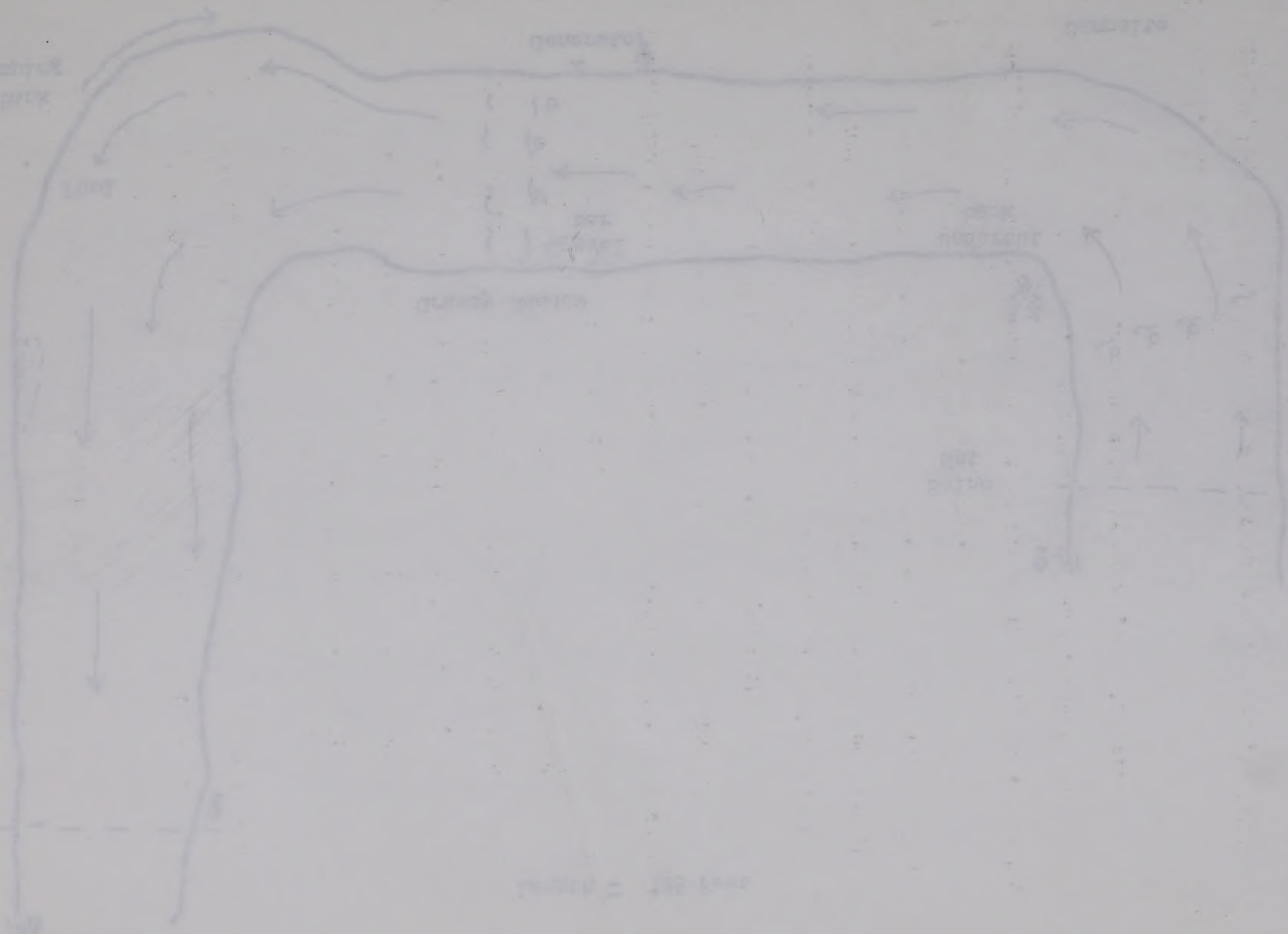
CUTTOFF CREEK SECTION #II

Length = 385 Feet



b = Bottom Sample

Figure 2. Sketch of the upper section sampled in Cuttoff Creek, June 14, 1966.



but gave the same results. Observations of the stream during May, June and September indicate that seasonal fluctuations in stream flow are moderate.

Elevation and gradient: Cutoff Creek rises at an elevation of 5,100 feet and empties into the Clearwater River at an elevation of 4,600 feet. The average gradient is 45 feet per mile.

Watershed: The watershed consists of foothills with pine forest but the stream flows through alpine meadows vegetated with grass, ericaceous plants and low willow bushes.

Turbidity and color: The stream is clear and colourless during most of the year. During the early part of May the stream was slightly turbid.

Bank Cover: The banks are composed of a dark organic soil covered with grass and low willow bushes. In some areas bank cover is scarce due to over-grazing by cattle.

Pools and riffles: The pool to riffle ratio is 25:75. Pools are 2-4 feet deep but are lacking in cover. Bank slumping was observed at bends in the stream in section II. Riffle areas have clean gravel and rubble.

Access: The lower reaches of Cutoff Creek are close to a forestry access road. The upper reaches are accessible by roads suitable for four-wheel drive vehicles, and by trails.

Biological Features

Bottom fauna: A sample of the bottom fauna collected in 1953 (Miller and Paetz) had a displaced volume of 0.9 cubic centimeters per square foot (c.c./sq. ft.) and contained

TABLE I. The volumes and numbers of aquatic organisms collected from six square feet of riffle area in Section I and II of Cutoff Creek, June 14, 1966.

	SECTION I		SECTION II	
	No.	Vol. (c.c.)	No.	Vol. (c.c)
Ephemeroptera				
Baetidae (misc)	2	NM	16	0.1
Ephemerella	33	2.2	21	1.2
Heptageniidae			25	0.1
Cinygmula	50	0.3		
Plecoptera				
Chloroperlidae				
Hastaperla brevis	21	0.1	2	NM
Perlidae				
Acroneuriinae				
Acroneuria	5	1.3	15	0.4
Trichoptera				
Hydroptilidae			6	0.1
Orthotrichia	13	0.9	10	0.5
Rhyacophilidae	1	NM		
Rhyacophila	21	0.2		
Coleoptera				
Elmidae	11	NM	3	NM
Diptera				
Tipulidae				
Hexatoma	1	0.1		
Rhaphidalabis	10	0.2	2	NM
Tendipedidae				
Chironomus			6	NM
Turbellaria	2	NM		
	170	6.3 c.c.	106	2.4 c.c.
	28 org. per sq. ft.	(0.9 cc/sq ft)	18 org. per sq. ft.	(0.4 cc/sq ft)

a total of 137 organisms. A Surber sampler was used to collect bottom organisms from six square feet of riffle area in the two sections of Cutoff Creek. (Figures 1 & 2). Samples from section II had a volume of 0.4 c.c./sq. ft. and contained 18 organisms per sq. ft. and samples from section I had a volume of 0.9 cc./sq. ft. and contained 28 organisms per sq. ft. (Table I).

Fish: Fish were captured from the study sections with a direct current fish shocking unit operated at 4-6 amperes and 240 volts. Six Dolly Varden (Salvelinus malma) were captured in section I. These fish were all two years of age and averaged 203 mm. in length. In section II, 18 Dolly Varden one year of age and 1 Dolly Varden in the second year class were captured. The one-year-old fish averaged 89 mm. in length. The two-year-old fish was 224 mm. in length. No other species of fish were captured from the sections but a Mountain whitefish (Prosopium williamsoni) was captured by angling above section II in the spring of 1967.

DISCUSSION

Cutoff Creek has long stretches of riffle and a few large deep pools at bends in the stream course. In some areas bank slumping and a lack of adequate bank cover reduce the habitat available for trout. Cattle grazing should be controlled along the streams to protect the bank cover. Various methods such as placing salt at a considerable distance from the stream and constant supervision of the cattle may decrease overgrazing of the stream bank but the effectiveness of these methods depends on the shape of the meadows and the integrity of the herdsmen. Meandering streams,

such as Cutoff Creek, flowing through long narrow meadows can only receive adequate protection from overgrazing by fencing the stream banks.

The samples of bottom fauna are not large enough or sufficiently random to evaluate the productivity of the stream. Samples of the fish population are small and represent only the lower reaches of Cutoff Creek. The information available indicates that the population of Dolly Varden is very limited but average growth rates of Dolly Varden in Cutoff Creek compare favourably to those in other streams in the Clearwater Forest Reserve (Table III).

TABLE III. The average fork length (millimeters) of each age class of Dolly Varden captured in five streams in the Clearwater Forest Reserve.

Number Of Annuli	Cutoff Creek June/66	Elk Creek June/66	Rough Creek July/66	Trout Creek July/66	Rapid Creek July/64
0	-	74 (10)	-	-	-
I	89 mm (18)*	120 (9)	126 (2)	-	106 (3)
II	203 m (6)	171 (29)	221 (10)	-	146 (9)
III	-	284 (5)	295 (2)	223 (1)	-
IV	-	382 (1)	-	-	-
V	-	-	-	470 (1)	-

* Number in brackets indicates sample size

The absence of three and four year old fish in the population may reflect heavy angling pressure but other factors such as sample size, water levels, available habitat and winter mortality must be considered before reaching conclusions.